



RHODE ISLAND
DEPARTMENT OF ENVIRONMENTAL
MANAGEMENT

235 Promenade Street, Providence, RI 02908-5767

TDD 401-222-4462

To: Municipal Officials

From: W. Michael Sullivan
Director, RI Department of Environmental Management

A handwritten signature in black ink, appearing to read "W. Michael Sullivan".

David Gifford
Director, RI Department of Health

A handwritten signature in black ink, appearing to read "David Gifford".

Date: April 29, 2008

Re: Use of Methoprene for Mosquito Control
During Upcoming Mosquito Season

This letter addresses the concerns being expressed about the use of the pesticide methoprene (trade name: Altosid) to reduce the numbers of mosquito larvae (the immature aquatic stage) in local communities throughout Rhode Island. The product and application strategy, which have been employed successfully in Rhode Island for many years, reduce the human risk of contracting West Nile Virus (WNV). The program also minimizes the need to target adult mosquitoes with aerially sprayed products that are generally less effective and can have adverse environmental impacts. For these reasons, as further outlined below, the RI Department of Environmental Management (DEM), in coordination with the RI Department of Health (HEALTH), will continue to employ the strategy as a key component of the State's overall mosquito control and human health protection program during the upcoming mosquito season.

Altosid usage in Rhode Island's mosquito control program is limited to underground stormwater catch basins, an important habitat for mosquito species known to transmit WNV. Altosid is recognized as being the most reliable product for treating catch basins. The RI Program uses a 30-day, slow-release formulation, involving a very dense pellet that sinks and has a strong tendency to remain in the basins during rain events. Another possible choice is the biological treatment called *Bacillus sphaericus*, a bacterium that is specific and selective for mosquito larvae. Under ideal conditions, these bacteria can recycle in dead and dying mosquitoes, providing extended larval control;

however, unlike Altosid, the product tends to flush from basins during rain events, making it less reliable, unless it is reapplied regularly.

WNV is a serious threat to human life, especially among elderly people and those with weakened immune systems. WNV is carried by wild birds in natural habitats, and is spread to humans by mosquitoes that bite infected birds and then bite humans. Other mammals can be infected in the same way.

There is no available human vaccine for WNV. Thus, the prevention of this mosquito-borne disease is critically important to the protection of public health. The best ways to prevent the disease are to minimize exposure to infected mosquitoes and reduce mosquito populations. Rhode Island, through its mosquito control program, utilizes three primary strategies:

- Educate the public about the importance of personal protection and the elimination of mosquito breeding environments at home.
- Apply larvicide to storm drains and similar mosquito-breeding environments to kill immature mosquitoes without harm to the natural environment.
- In high-risk situations: apply adulticide to targeted geographic areas by ground or aerial spraying to kill adult mosquitoes. Adulticides kill a broad spectrum of insects, both good and bad, and therefore is used only when other efforts have failed to protect the public from exposure to infected mosquitoes.

Since 1999, when WNV was first revealed in the U.S., Rhode Island has relied primarily on the first two strategies to prevent human cases of the disease. They have proven effective. From 2000 through 2007, the number of serious WNV cases among RI residents has been limited to seven. In the past four mosquito seasons, there has been only one human case in RI.

If preventative measures were abandoned in RI, the number of cases of serious WNV in the State would likely increase. A review of disease patterns and risk factors suggests that RI could expect to see at least ten new cases of serious WNV disease each year, resulting in at least one death per year, if the preventative measures that have been undertaken to date were discontinued or curtailed. The projections are only estimates, but they reflect a serious public health concern.

Rhode Island has a population of about 150,000 elderly people, the primary group at risk for serious WNV disease. Among them, more than 10,000 are extremely frail, requiring skilled nursing care. Most reside in skilled nursing facilities, while some reside in private homes. For these people, the risk of death following WNV infection is extremely high, and public health strategies that limit their exposure to mosquitoes are essential.

Recently, concerns have been expressed over the use of methoprene as a mosquito-control agent, due to its potential impact on juvenile lobsters. While laboratory studies do show that lobster larvae are affected by methoprene at levels above one part per billion (1 ppb), there is no evidence indicating that use of methoprene in catch basins has any impact on lobsters in the natural environment.

Among the best scientific information available on the subject is recent PhD dissertation research conducted by Dr. Mari Butler at the University of Rhode Island. One of Dr. Butler's experiments involved assessing methoprene levels in Point Judith Pond following the attempt to flush the product from two connected catch basins that had been treated with methoprene. Water samples were taken from the pond, both immediately adjacent to the outflow pipe, and 30 meters away. Only two of the samples at the outflow pipe had detectable concentrations of methoprene, measuring 0.05 ppb and 0.06 ppb. There were no detectable levels of methoprene in any of the remaining samples. Similar results were obtained via a 2006 study in Toronto, Canada, which found that releases of methoprene from the outfall of a treated stormwater system were in the 0.03 to 0.04 ppb range. Such levels are well below EPA standards and have not been shown to be detrimental to lobsters or any other natural resource.

Following the lobster die-off in Long Island Sound in 1999, Connecticut-based studies were conducted to determine if the die-off could have been due to mosquito-related pesticides. The studies found no connection, and determined that even if all the methoprene applied in the watershed ended up in the Sound, which is unlikely, the 24-hour average methoprene concentration in the Sound would be 0.0005 ppb.

While the available scientific information is limited, the research conducted to date indicates that methoprene levels in waters immediately adjacent to treated storm drain outfalls are either non-detectable or at concentrations that are only 1/20th of the levels shown to be harmful to juvenile lobsters in laboratory experiments; importantly, methoprene is not detected in any samples taken from waters just beyond the outfalls.

DEM has continued to track and analyze stock assessment and survey data pertaining to the lobster resource in Rhode Island and southern New England waters. An analysis of mortality rates between various life stages of lobster, including newly settled juveniles, does not indicate any impact of methoprene usage. On a broad scale, mortality rates from spawning females to newly settled juveniles are related to the initial number of eggs spawned and to oceanographic factors that deliver larvae to coastal nursery areas, with no evidence of any methoprene mortality component. On a fine scale, a review of lobster settlement success at a sampling location near Black Point in Narragansett shows that there was no significant difference between the 1990-1999 and 2000-2007 sampling periods. The sampling location is close to an extensive system of catchment basins in Narragansett that received methoprene applications from 2000-2007, but not in the years prior.

A team of scientists and researchers from DEM, URI, the U.S. Geological Survey, and HEALTH has reviewed and carefully considered the research on methoprene, and on

the basis of that review, DEM will continue to recommend and provide Altosid to communities for the upcoming mosquito season. Bacillus sphaericus will also be made available to communities opting for that product. Arrangements are now being made for distribution of larvicide to cities and towns. *Important: Any community opting to utilize Bacillus sphaericus, in lieu of methoprene, must notify Alan Gettman at DEM no later than May 16, since DEM would need to place an order for the product.* Two (identical) training sessions for community employees who apply mosquito larvicides will be held May 22 and May 28 from 8:30 to noon at East Farm, URI. Registration forms will be faxed this week, as a follow-up to this letter.

We trust this communication provides local officials with a sound basis for deciding how best to proceed regarding local mosquito control programs for the coming season. For further information, please contact Dr. Alan Gettman, Mosquito Abatement Program Coordinator at DEM at 789-6280 or AGettman@etal.uri.edu.